



# Poplar Borer

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## Introduction

The poplar borer is the most commonly submitted wood borer found in aspens and other poplars in Utah. While large trees are seldom killed by this pest, it can cause the decline of trees, weakening of branches or the bole (which promotes wind breakage), and allows the introduction of pathogens.

## Identification

The poplar borer, *Saperda calcarata* is a member of the longhorned beetle family (Cerambycidae), so-named because of the long antennae of the adults. The larvae of this family are known as roundheaded wood borers.

Adult poplar borers [Image] are 20-30 mm in length with the antennae about as long as the body. They are gray-blue in overall color with fine brown dots overlaying a faint yellow pattern on the wing covers. The underside of the adult is somewhat hairy.

Eggs of the poplar borer are about 3-4 mm in length and somewhat less than half as wide. They are creamy-white in color and are usually found singly in bark crevices, though sometimes in groups of two or three.

Poplar borer larvae are legless, elongate, cylindrical, and yellow-white in color, with a full-grown length of 30-38 mm. Larvae are found in galleries 10-20 mm in diameter, which extend into the sapwood.

Pupae of the poplar borer are usually found near the entrance of frass-plugged galleries. They are yellow-white and 20-35 mm in length.

## Life Cycle

In Utah, adult poplar borers emerge during the period from about June 1 through August 1. Mating begins about a week later, with eggs being produced a few days after mating.

Females chew a niche or slit in the bark and lay eggs, usually singly but sometimes in groups of two or three.

Eggs incubate for about two weeks and hatch, after which the small larvae enter the bark and later move into the sapwood. Depending on geographic location and climate, larvae require from two to five years to complete development. The life cycle requires three years in most western states, including Utah. Activity of the larvae ceases during the winter months and resumes in spring, with the openings of the galleries being plugged with frass during winter.

Pupation requires a minimum of two to three weeks, but some pupae reportedly overwinter after completing larval development the previous autumn. Adults emerge through the frass plugs at the lower end of the galleries.

## **Damage**

Poplar borer mostly affects aspens and other poplars but is also found in willows. Most Utah specimens are submitted from aspens, followed by other poplars, and willows. Throughout its northern range the pest affects aspens more often than other poplars or willows.

The poplar borer attacks the bole and large branches of affected trees. While branches as small as 40 mm diameter may be attacked, the borer prefers limbs or boles with a diameter of 80 mm or more. Open-grown and single trees with partially-shaded or unshaded trunks are most attractive to egg-laying females. Over-mature trees are also likely candidates for attack.

Wet spots from oozing sap mixed with fine frass (boring dust or shavings) are early signs of infestation. A black varnish-like stain is commonly found below the points of attack. As the larvae become larger, frass becomes more fibrous and excelsior-like. Large amounts of coarse frass may be seen at tunnel entrances, in bark crevices, or at the base of the tree. Attacks may be single or in clusters. When attacks are clustered, the wood becomes honeycombed under the bark and irregular patches of bark may fall out. Wound sites may develop rough growths on the bark. Woodpecker activity or woodpecker excavations in the wood are another sign of infestations.

Galleries produced by the larvae are 10-20 mm in diameter and extend obliquely into the sapwood for 5-8 cm, then usually straight up for another 10-18 cm, for a total length of 15-24 cm. Larvae avoid each other's galleries, so the galleries are not always straight.

Larval damage seldom kills large trees but weakens branches or the bole, making them susceptible to wind breakage. Galleries allow the introduction of plant pathogens, such as hypoxylon canker and wood-rot organisms. Small trees are occasionally killed by extensive girdling of the trunk.

## **Control**

Natural control agents kill a fairly large percentage of poplar borers, but high-value ornamental trees probably require cultural and sometimes chemical controls to keep poplar borers in check.

Natural enemies include at least three insect parasites and various predators. Up to about 40 percent of eggs and larvae of the poplar borer may be killed by these natural enemies. Woodpeckers may consume up to 65 percent of larvae in some regions. Climate and sap flow

of individual trees also affect mortality of the borers.

Cultural practices include avoidance of poor planting sites and maintaining trees in vigorous condition by proper watering and fertilization. Since open-grown and single trees with unshaded trunks are more susceptible to attack, planting trees in groups with shade provided for the trunks should minimize the attractiveness of trees. Removal and disposal of heavily-infested trees may be advisable since they can act as a source of large numbers of poplar borers, which may then attack other nearby trees.

Insecticides to control poplar borer are most often directed at the egg-laying adults and newly-hatched larvae. For this reason, proper timing of insecticide treatments is essential. For maximum protection, the first treatment should be applied about June 1. Some recommendations call for repeated treatments at two-week intervals through August 1, making a total of four treatments. However, monthly treatments may be sufficient given the residual effect of the insecticides. Applications should be most thorough on existing areas of attack, if any, and on the middle areas of the tree, including the trunk and large branches.

Insecticides currently labeled for borer control on poplars include certain formulations of acephate, diazinon, dimethoate, and permethrin. Most insecticide treatments are directed at the adults and small larvae at the time of egg-laying or hatch. Systemic insecticides, such as acephate and dimethoate, have shown some promise in controlling larvae that are already in the tree, but satisfactory control of larvae is difficult.

NOTE: The most often recommended insecticides for poplar borer control have been chlorpyrifos and lindane. Home and garden uses of chlorpyrifos and lindane have recently been removed from product labels or, in some cases, the products have been cancelled. While homeowners can use up old existing stock that is labeled for ornamental uses, these products will no longer be sold for this purpose. Diazinon home and garden uses will likewise be cancelled in the near future. Acephate and dimethoate are currently under review.

Insect-attacking nematodes injected into borer holes have given partial control of poplar borer larvae. These nematodes belong to the genus *Steinernema* and are sold under the trade names "Biosafe", "Biovector", and "Exhibit".

### **Precautionary Statement**

All pesticides have both benefits and risks. Benefits can be maximized and risks minimized by reading and following the labeling. Pay close attention to the directions for use and the precautionary statements. The information on pesticide labels contains both instructions and limitations. Pesticide labels are legal documents, and it is a violation of both federal and state laws to use a pesticide inconsistent with its labeling. The pesticide applicator is legally responsible for proper use. Always read and follow the label.

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